

# AWNING RETENTION DEVICE

## Field of the Invention

The present invention relates to a device for securing an awning. More particularly,  
5 the present invention relates to a device for keeping an awning attached to a recreational vehicle from opening during transit.

## Background

Recreational vehicles (RVs) have become very popular for vacationers and retirees as a place of lodging and means of transportation. RVs include a whole family of vehicles that  
10 combine transportation and temporary living quarters for recreation, camping and travel. Some provide a simple place for sleeping and eating, while others are virtually luxury lodges on wheels.

Conveniences found in RVs range from the basics -- like running water, cooking and bathroom facilities, and power sources, such as electricity and liquid propane -- to added  
15 comforts such as air conditioning, entertainment systems and slideout rooms, etc. One convenience found on many RVs is an awning for providing shade and protection adjacent the RV on the outside.

A typical awning mounts to the side of the RV near the top and rolls out in a manner similar to how a window shade rolls down. Occasionally, in conditions of high cross-winds  
20 awnings may partially open and may be damaged. Traditional locking structures for securing awnings in a closed position are typically mounted on the support structure at a height that can be reached by a person standing on the ground. By mounting the locking structure in a position reachable from the ground, the leverage that is exerted by a cross-wind at the top of

the support structure may be increased. Additionally, locating the locking structure some distance from the top of the awning support may allow inherent flexibility in the awning support structure to permit the awning to be more susceptible to cross-wind damage.

### Summary

5           An awning retention device for securing a recreational vehicle awning supported by a nested arm support structure. The device includes an elongate member, a first hook section coupled with the elongate member at a first end and configured to at least partially surround an upper portion of the nested arm awning support structure, and a second bent section coupled with the elongate member at a second end and configured to secure the awning  
10 retention device to a lower portion of the nested arm awning support structure.

### Brief Description of the Drawings

Fig. 1 is a partial isometric view of a recreational vehicle and awning using an awning retention device according to an embodiment of the present invention.

Fig. 2 is a partial isometric view of the recreational vehicle of Fig. 1, illustrating the  
15 awning extended.

Fig. 3 is a plan view of an awning retention device according to an embodiment of the present invention.

Fig. 4 is a side view of the awning retention device of Fig. 3.

Fig. 4A is an end view of a portion of the awning retention device of Fig. 3.

20           Fig. 4B is a top view of the awning retention device of Fig. 3.

Fig. 5 is a partial side view of the awning retention device of Fig. 3, being installed on awning supports on the side of a recreational vehicle.

Fig. 6 is a partial side view of the awning retention device of Fig. 3, shown secured in place behind an awning support member.

Fig. 7 is a front view of the awning retention device shown in Fig. 3, shown secured in place behind an awning support member.

5 Fig. 8 is a schematic view of the awning retention device of Fig. 3, showing the device being used to open an awning.

#### Detailed Description

Figs. 1 and 2 show a recreational vehicle 10 having an awning 12 mounted thereto. Awning 12 may be supported by nested support arm structure 14, which may be configured  
10 to nest when awning 12 is retracted, as in Fig. 1. Nested support arm structure 14 may be configured to form a triangular support, when awning 12 is deployed, as shown in Fig. 2. Awning 12 may be mounted on a side 16 of the recreational vehicle adjacent a roof 18 of the recreational vehicle. An awning retention device 20 is shown securing a top portion of nested support structure 14 and thereby preventing the awning from opening.

15 Fig. 2 shows recreational vehicle 10 with awning 12 deployed. Awning retention device 20 can be removed so that nested support arm structure 14 separates to reveal an outer lower arm 14a and an inner upper arm 14b. Arms 14a and 14b may separate and slide relative to each other in order to achieve the triangular support configuration of deployed awning 12. Nested support arms 14a and 14b may also slide relative to each other in order to  
20 achieve a nested upright configuration when awning 12 is retracted. Awning retention device 20 may be secured to nested support arm structure 14 in order to prevent the support arms from separating. In this manner, awning retention device 20 can help prevent strong

side winds from getting under the awning roller and blowing the awning material up over the vehicle top.

Figs. 3-4 illustrate awning retention device 20 in more detail. Awning retention device 20 includes an elongate member 22. Elongate member 22 may be resilient and therefore bend under loading and unbend when loading is removed. Elongate member 22 may be sized so that one end may reach an upper portion of nested support arm structure 14. A first hook section 24 may be coupled with elongate member 22 at a first end. First hook section 24 may be configured to at least partially surround nested support structure 14. A second bent section 26 may be coupled with elongate member 22 at a second end distal from the first end. Second bent section 26 may be secured behind a lower portion of nested support structure 14.

As shown in Fig. 3, hook section 24 includes a first transverse section 28 that may be oriented generally orthogonal to elongate member 22 at a first end of elongate member 22. Hook section 24 may further include a second transverse section 30 generally parallel to first transverse section 28 and spaced apart therefrom. Second transverse section 30 may be generally orthogonal to elongate member 22. Hook section 24 may include a diagonal section 32 that may connect first and second transverse sections 28 and 30. Diagonal section 32 may be oriented generally orthogonal to first transverse section 28 and second transverse section 30. Hook section 24 may include a retention bend 38 oriented to extend from the end of transverse section 30. Such a bend can improve the ability of the retention device to effectively lock the support arm structure of an awning in a closed configuration. Fig. 4A shows an end view of transverse section 30 and retention bend 38, which are oriented at an

angle  $\phi$  relative to one another. Angle  $\phi$  may be between approximately 30 degrees and 90 degrees.

Second bent section 26 may include a third transverse section 34 which may be generally parallel to both first transverse section 28 and second transverse section 30. Like  
5 the other transverse sections, third transverse section 34 may be oriented generally orthogonal to elongate member 22. As shown in Fig. 4, second bent section 26 may include an angled tip 36 which may be oriented to extend angularly from the end of a third transverse section 34. Angled tip 36 may also be referred to as retention bend 36. Fig. 4B shows a top  
10 view of transverse section 34 and retention bend 36, which are oriented at an angle  $\theta$  relative to one another. Angle  $\theta$  may be between approximately 30 degrees and 90 degrees.

Also shown in Fig. 4, diagonal section 32 may be generally oriented at an angle  $\alpha$  of between 10 degrees and 80 degrees to elongate member 22. More preferably, diagonal section 32 may be oriented at an angle of between 15 degrees and 35 degrees relative to elongate member. Still more preferably, diagonal section 32 may be oriented at an angle of  
15 approximately 28 degrees relative to elongate member 22. As will be described below, angle  $\alpha$  enables elongate member 22 to bend within the members elastic range to secure the first hook section and the second bent section partially around nested support arm structure 14.

Fig. 3 illustrates an embodiment of awning retention device 20 that includes a protective coating, for example a rubberized film, covering hook section 24 and bent section  
20 26. A protective coating may prevent awning retention device 20 from scratching the finish on support arm structure 14. Additionally, a protective coating may prevent rubbing between awning retention device 20 and awning support arm structure 14 that can accelerate material

degradation such as rust, or other oxidation. Moreover, adding a protective coating covering hook section 24 and bent section 26 enhances the users interaction with awning retention device 20 by providing a better tactile interface with the user.

Fig. 3 also illustrates a secondary fastener 39 that can be used to secure an awning retention device in place. A secondary fastener can be permanently or removably attached to an awning retention device and configured to wrap at least partially around a support arm of an awning. In some embodiments, secondary fastener 39 can take the form of a hook and loop closure system which can be secured to the awning retention device and wrapped around a support arm of an awning. The secondary fastener can help the awning retention device secure the awning support in a closed position. Fig. 7 shows a secondary fastener 39 in use. It should be understood that a secondary fastener is not required in all embodiments.

Figs. 5-7 illustrate the steps for using awning retention device 20 to secure nested awning support structure 14 from opening under cross-wind conditions. Initially, as shown in Fig. 5, hook section 24 may be used to partially surround nested awning support arms 14a and 14b. Bent section 26 may be pushed around behind a lower portion of nested awning support structure 14, thereby securing awning retention device 20 in place. As explained below, elongate member 22 bends during installation providing a biasing force that may help to secure the awning retention device in place. Hook section 24 prevents support arms 14a and 14b from separating and/or sliding relative to one another. In particular, when installed near the top of arms 14a and 14b a tensioned hook portion very securely holds the support arms in a closed position.

Hook section 24 may be aligned as follows: placing second transverse section 30 between RV side 16 and a rear surface of support arms 14a and 14b; placing diagonal section

32 adjacent a side surface of support arm 14, such that the diagonal section may extend downward and away from RV side 16; and placing first transverse section 28 adjacent an outer surface of support arm structure 14. With each section so aligned, first hook section 24 may partially surround nested support arm 14 preventing the support arms from separating.

5           Securing bent section 26 behind a lower portion of nested awning support arm 14 causes elongate member 22 to bend, thereby applying a biasing force that presses first transverse section 28 and second transverse section 30 into support arm structure 14 squeezing the two arms 14a and 14b together preventing them from separating and sliding relative to one another. Fig. 6 shows awning retention device 20 secured to support arm  
10   structure 14.

          Installing awning retention device 20 may include bending elongate member 22, both sideways away from support arm structure 14 in an amount sufficient for bent section 26 to pass by the support arm structure, and rearward toward RV side 16, until the bent section is between RV side 16 and support arm structure 14. Finally, bent section 26 may be permitted  
15   to slip back sideways behind support arm structure 14, partially unbending elongate member 22. As noted above, elongate member 22 remains bent to some extent as transverse member 32 abuts the rear surface of support arm structure 14. The bend in elongate member 22 provides a loading force that secures the awning retention device in place. Support arm structure 14 may be prevented from separating and sliding by transverse members 28, 30,  
20   and 32.

          Fig. 7 shows a front view of awning retention device 20, installed on awning 12 of RV 10. As noted above, when installed, awning retention device 20 may secure support arm structure 14 by hook section 24, partially surrounding an upper portion of the awning support

arm structure. Elongate member 22 extends downward from hook section 24 and bent section 26 may be secured behind a lower portion of the awning support arm 14.

Fig. 8 illustrates another use for awning retention device 20. Awning 12 may include a strap 39 that extends downward from the awning to allow the awning to be manually pulled  
5 out from the side of the RV. Strap 39 may be hooked using either bent section 26 as shown in Fig. 8, or hook section 24 (not shown). A person may deploy awning 12 by hooking strap 39, with either end of awning retention device 20, and pulling the awning downward and out away from the side of the RV. As the awning is being pulled out and down, support arm structures 14a and 14b slide relative to one another. As shown in Fig. 2, support arm  
10 structure 14a provides a down support diagonally connecting awning 12 to a lower portion of RV sidewall 16, when awning 12 is extended. Support arm structure 14b extends generally horizontally between upper portion of RV sidewall 16 and an outer edge of awning 12.

Although the present invention has been shown and described with reference to the foregoing operational principles and preferred embodiments, it will be apparent to those  
15 skilled in the art that various changes in form and detail may be made without departing from the spirit and scope of the invention. The present invention is intended to embrace all such alternatives, modifications and variances that fall within the scope of the appended claims.